

ABSTRACT

BACKGROUND:The challenge to the prognosis of endodontic therapy lies on the quality of root canal filling. The zinc oxide eugenol (ZOE) based sealers were introduced in Endodontics by **Grossman** in 1936 and they have been used in dentistry over a long period of time. It has been reported that eugenol released from ZOE is an irritant to the periapical tissues and has cytotoxic properties. To overcome these disadvantages, there is a continued research for chemical compounds with better physical properties and more biocompatibility. Ozone therapy has a long history of research and clinical application with humans because of its interesting biological properties.

AIM:The aim of the study is to evaluate and compare the physical properties and biocompatibility of zinc oxide- ozonated eugenol and conventional zinc oxide eugenol.

MATERIALS AND METHODS:Following physical properties of conventional zinc oxide eugenol and zinc oxide-ozonated eugenol were evaluated and compared. [**Group I:** Zinc oxide – eugenol; **Group II:** Zinc oxide - ozonated eugenol]. Hardness of the mixed samples was measured using Shore hardness Durometer type A. Solubility was tested as a percentage of the mass of specimen removed from the distilled water compared with the original mass of the specimens using Mettler analytical balance. pH of the fresh samples and the set samples were measured using calibrated pH meter after predetermined time intervals. Biocompatibility of the tested samples was evaluated using the MTT tetrazolium reduction assay.

RESULTS: The results of the present study have shown that the hardness and solubility of the tested samples were almost similar in both the groups. pH and biocompatibility of the samples in Group II where eugenol is ozonated was higher when compared to the samples in Group I. The proportional values obtained were statistically analysed by unpaired t-test.

CONCLUSION: Within the limitations of the study, it could be concluded that ozone with interesting biological properties seems to be a better treatment modality in improving the properties of eugenol. However further clinical trials and randomized control studies are required in this field to use ozonated eugenol in combination with zinc oxide powder to use it as an endodontic sealer invivo.

keywords: zinc oxide, eugenol, ozone, root canal sealer, biocompatibility